

obstetrics

obstetrics:

→ Science which deals with pregnant female from period of fertilization till the end of post partum period.

pregnancy (gestation period):

Def: It is the period from fertilization till parturition.

Factors Affecting gestation period:

① Hereditary Factor:

① Species:

Rabbit	30 Day
queen	59 Day
Bitch	63 Day
Sow	114 Day
Ewe	150 Day
Cow	9 month ± 15 Day
Buffalo	10 month ± 15 Day
Mare	11 month ± 15 Day
She-Camel	12 month
She-donkey	13 month

② subspecies:

Beef Cow & Dairy Cow

③ phenotype:

Mare X stallion	330 - 360 Day Foal
Stallion X ass- Donkey	330 - 360 Day hinny Foal
Mare X Jak- Donkey	360 - 380 Day Mule
Mule the longest gestation period (As) Male determines the gestation period.	

② Environmental Factors:

① Season	② Nutrition
winter ↑ Summer (As) heat stress → ↑ Cortisone → induction of parturition.	↑ Nutrition → ↓ gestation period.

③ Fetal Factors:

① Number (twins)	② size	③ sex
↑ Number → ↓ gestation period.	↑ size → ↓ gestation period.	♀ > ♂ Fetus.

④ Maternal Factors:

Number of Previous Pregnancy
→ pleuriparous > Heifer.

①

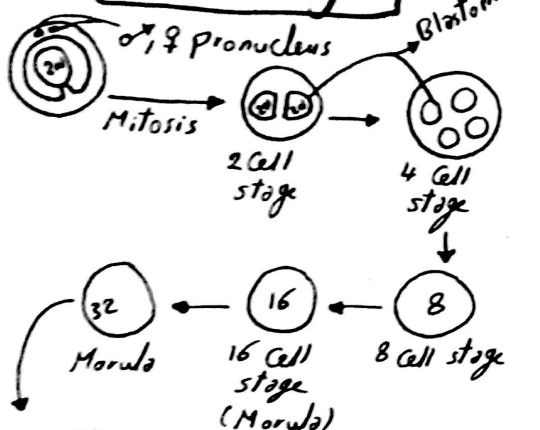
Pregnancy period classified into 3 stages

Item	Ovum stage	Embryonic stage	Fetal stage
• <u>Def.</u>	stage start By Fertilization and end with implantation.	stage start By implantation and end with organogenesis and Placenta Formation.	start From end of organogenesis and Placenta Formation and end with Parturition (Fetal growth) = 35 kg.
• <u>Site</u>	① Fallopian tube. ② uterus.	uterus.	uterus.
• <u>Duration</u>	Ewe 1 → 10th day. Cow 1 → 13th day. Mare 1 → 29th day.	10-35 Day. 13-45 Day. 29-55 Day.	35-150 day (5 month) 45-280 Day (9 month) 55-330 Day (11 month)
• <u>Failure in this period</u>	Failure of Fertilization.	early embryonic Death (Repeat Breeder).	• Abortion → dead Fetus Before time of parturition. • still Birth → dead Fetus at time of Parturition.

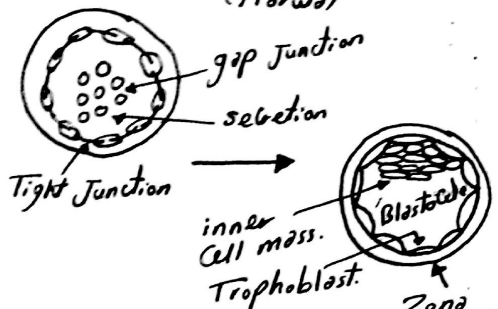
Compare Between Amniotic Fluid and Allantoic Fluid

Item	Amniotic Fluid	Allantoic Fluid
• <u>origin</u>	Amniotic membrane ⊕ Fetal skin.	urine of Fetus.
• <u>Regulation</u>	Suction.	exchange with Placenta.
• <u>Composition</u>	Protein, Lipid, Mineral, Vitamin, CHO.	The same as urine.
• <u>Consistency</u>	Vis Cus.	Watery.
• <u>odour</u>	Fleshy (soup-like)	urineferous
• <u>Volume</u>	Cow 5-10L Mare 7L	15L 10L

A Ovum stage ::



• This stage take
Fallopian Tube → 2-5 Day.
uterus → 8-11 day.



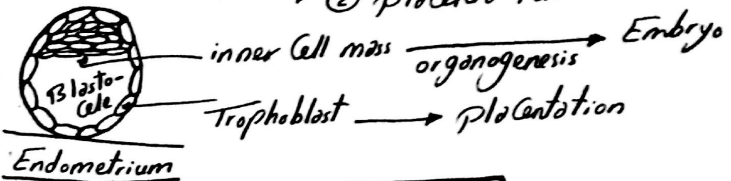
Blasto Cyst (embryo Ready For Implantation)

Endometrium Implantation (By):
• Enzymes.
• Finger like Projections of trophoblast → will develop into Cotyledons.

Nutrition From:
• oviduct Secretion.
• uterine Milk.
• Secretions "Blasto Cyst"
↓
Resemble Yolk Sac in Poultry.

B Embryo stage ::

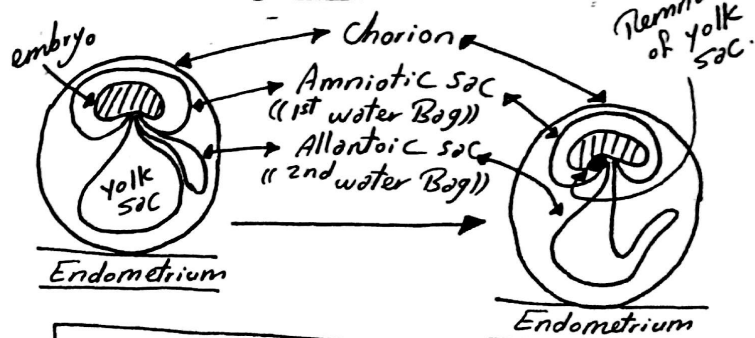
① organogenesis.
② Placenta Formation.



① Organogenesis ::

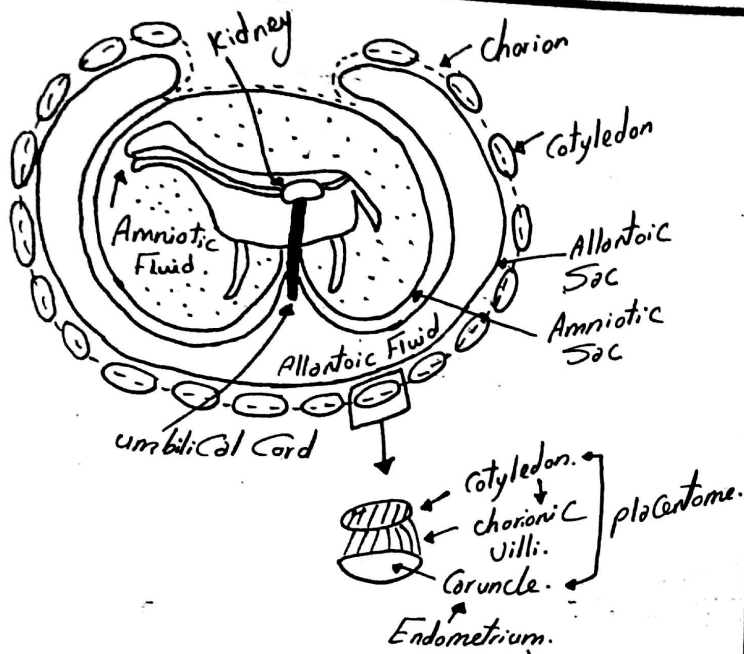
2nd → 4th week	eye ball start to appear
4th week	heart Beats
5th week	leg buds

② Placenta Formation ::



• yolk sac ↓ Due to Consumption of Nutrients.
• Allantoic sac ↑ Due to Accumulation of waste Products.

③



Amniotic Fluid
(Amniotic Sac secretion + Fetal skin)

Suction By Fetus

kidney
urine

Allantoic Sac

excreted By placenta

⊙ Avoid pressure on fetus.

gut

till Parturition
or Death.

Circulation:

Endometrium (Caruncle) → Cotyledon (Chorion)
→ Allantoic Sac → Amniotic Sac.

- If Amniotic Sac intact → Fetus is good.
- If Amniotic Sac Ruptured → Fetus depends on Respiration and you must get it out.

• Amniotic Plaques: ⊙

Deposition of Ca^{+2} on the surface of Amnion appear as white spots / white elevations.

• Allantoic Coliculi: ⊙

Fleshy mass Present in Allantoic Sac
Consists of

- uric Acid.
- Tissue debris.
- degenerated Blood vessels.

it is Called

- hypomanus → Equine.
- Bovomanus → Cow.
- Bulbomanus → Buffalo.

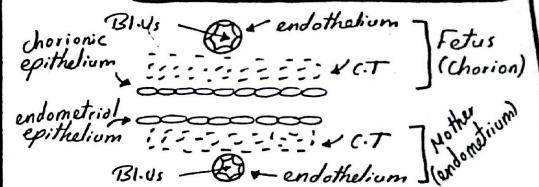
⊙

(A) Anatomical Classification

Depend on → Distribution of Chorionic Villi on the Chorion (Placenta).

Classification of Placenta :: (1)

(B) Histological Classification



Simple diffuse Placenta ^①	Cotyledonary Placenta ^②	Zonary Placenta ^③	Discoidal Placenta ^④
In which Chorionic Villi Cover the whole surface of the Chorion.	In which Chorionic Villi Present on the Cotyledon	In which Chorionic Villi Present in Zone (Band Around the Chorion).	In which Chorionic Villi only Present in disk.
Mare - Sow.	Cow - Buffalo - Sheep - goat.	Bitch - queen	Human, Monkey, Rat, Mouse.
<ul style="list-style-type: none"> Mare → Cervical Star → Area opposite to the Cervix in which there is No Chorionic Villi. Sow → polytalous → the point at which the 2 placenta of the 2 fetuses opposite to each other → Not have Chorionic Villi. 	<ul style="list-style-type: none"> Caruncle of Cow → Convex Caruncle of Sheep, goat → Concave (Cup shape) 		

① Epithelio-chorial	6 layers (No loss).	Mare - Sow.
② Syndeso-chorial	5 layers (loss of endometrial epithelium).	Cow - Buffalo - Sheep - goat.
③ Endothelio-chorial	4 layers (loss of endometrial epith. C.T of Mother.)	Bitch - queen.
④ Hemo-chorial	3 layers (loss of endometrial epith. C.T of Mother. BL-us of mother.)	Human, Monkey.

(6)

1. Hydropsy :: (A)

• Def ::

Pathological Condition char by Abnormal ↑ Amount of Fetal Fluids.

• Types ::

Hydroallantois	Hydroamnios
<ul style="list-style-type: none"> AbNormal ↑ in the Amount of Allantoic Fluid. 	<ul style="list-style-type: none"> AbNormal ↑ in the amount of Amniotic Fluid, Accompanied by Congenital Anomalies
<ul style="list-style-type: none"> Related to the Female (uterus). 	<ul style="list-style-type: none"> Related to the Fetus.

• Incidence ::

- hydroallantois occurring 10-15 times than hydroamnios.
- 7% of Cases → Both hydroallantois and hydroamnios are Present together.

Pathology of Fetal Membranes

- 1. Hydropsy.
- 2. Moles.
- 3. Placentitis.
- 4. edema of placenta.

• Causes ::

① Torsion

→ Torsion of umbilical Cord lead to Transudation and Collection of the Fluid.

② Hereditary Factor @ in Breeding.

③ Congenital defective Factor

→ Related to Hydroamnios.

④ Bull Dog Calves.

• Cleft Palate.

• Hydrocephalus (↑ Amount of CSF of fetus).

• Schistosoma Reflexus (opened Abdomen).

⑤ More Common in Twins.

⑥ Nutritional Deficiency of Protein, vit A, vit B.

⑦ Disease of uterus

Most of Coruncles in one horn is Not Functioning.

(6)

Symptoms:

general health Disturbance Due to Pressure of distended uterus on the digestive and Respiratory System.

Light Form	Middle Form	High Form
<ul style="list-style-type: none"> • Light general health Disturbance. 	<ul style="list-style-type: none"> • Clear general health Disturbance. • Dry skin. • Sull A. • Sunken eye. • ⊕ Thirst. • ⊕ H.R., R.R. • Frequent urination in Small A. • Digestive Disturbance → Anorexia, Constipation, Stop of Rumination. 	<ul style="list-style-type: none"> • weak Animal → unable to stand, ending by permanent Recumbency.
<ul style="list-style-type: none"> • Amount of Fluid 10-20 gallon (gallon → 3.5L) • Clear yellowish watery Fluid. 	<ul style="list-style-type: none"> • More Fluid. 	<ul style="list-style-type: none"> • More Much Fluid.
<ul style="list-style-type: none"> • ⊕ Abdominal size From Both sides. 	<ul style="list-style-type: none"> • Pear-shape Abdominal size. 	<ul style="list-style-type: none"> • Severe enlargement of Abdominal size. • Abdominal Circumference → 3m. • Barrel shape.

• Rectal examination
→ Distended uterus.

• Dystoia Due to uterine inertia.

• Severe Uterine Distension and uterus Difficult to be palpated Due to Pressure of the Fluid on Rectum.

• Can Be treated.

• Can Be treated.

• No TM
→ slaughter.

Differential Diagnosis:

Ascites	Twins	Hydrometra
<ul style="list-style-type: none"> • Accumulation of Fluid in Abdominal Cavity. • History of liver disease and heart Disease. • puncturing of skin under Diaphragm By hand Breadth → will Result in Draining of Fluid. • R.Ex → Normal uterus. 	<ul style="list-style-type: none"> • Rectal Ex.: → Palpation of the Repeated parts of the fetus (2 heads) (4 fore legs). 	<ul style="list-style-type: none"> • Affected Non-Pregnant A. (Accumulation of Fluid in the Non-Pregnant uterus). • Not reach to the extent of the hydropsy. • Absence of the reliable signs of Pregnancy.

• (Prognosis):

Light Form	Middle Form	High Form
<ul style="list-style-type: none"> • Good. • Pregnancy, Parturition → occur Normally And diagnosed at the time of Parturition (Amount of Fetal Fluid). • Uterine inertia. 	<ul style="list-style-type: none"> • Fair to good. • Allanto-Centesis. 	<ul style="list-style-type: none"> • Slaughter the A' Due to permanent Recumbency. • Dead Fetus. • Severe general health disturbance. • Allanto-Centesis if Done → shock.

• (Treatment):

Light Form	Middle Form	High Form
Pass Normally During Pregnancy and Parturition.	① Allanto-Centesis (Surgical drainage of Allantoic Fluid). ② Induction of Abortion By: a. Estrogen → (Folon or estradiol Benzote → 30-40ml). • Ca ²⁺ preparation → (Ca proglucinate 500ml).	slaughter the Animal.

- ⑬ PGF_{2α}
 ↳ estrumate 2.5Gm
 ↳ Lutalyse 5Gm IM or 25ml.
 ⑭ Combination of estrogen and PGF_{2α}.

② Placentitis:

• Def: Inflammation of placenta.

• Causes:

- ① Mechanical Trauma.
- ② Infectious M.O @ Brucella.

• Diagnosis:

After Parturition

⑬ Floating test

Suspected Part → Put in water

↳ If Sinking → inflammation.
 ↳ If Floating → healthy.

Then, Isolation and Identification.

③ Edema of placenta:

Diagnosed After Parturition.

4 Moles ::

Def::

hydropic Degeneration of chorionic villi, changed into vesicle containing sticky mass and proliferation of trophoblastic cells.

Types::

Mola Cystica	Mola Hydatica	Mola Villosa (Tuft Mole)	Mola Sanguinolenta (Blood Mole)	Mola Carnosa (Fleshy Mole)
<ul style="list-style-type: none"> Cystic degeneration of chorionic villi. Bitch, green. 	<ul style="list-style-type: none"> Chorionic villi changed into clusters of vesicles (Bunches of grapes). 	<ul style="list-style-type: none"> The same as Mola Hydatica But, the chorionic villi ↑ in size. 	<ul style="list-style-type: none"> Severe Trauma of A lead to → intrauterine hemorrhage. The Fetus become surrounded by clotted blood. 	<ul style="list-style-type: none"> originated From Blood Mole when the clotted blood stay in the uterus for sufficient time enough organization of blood. Fetus become surrounded by fleshy mass.

Treatment::

Induction of Abortion → شبری صیق

Diagnosis::

Rectal Examination::

- Dead Fetus.
- uneven (irregular) uterine wall in Mola Hydatica, Mola Villosa.
- Palpation of clotted blood in Mola Sanguinolenta, Fleshy mass in Mola Carnosa.

July 2

Pathology of pregnancy Due to Fetus

- ① Abnormalities of Fertilization.
- ② Anomalies of the Fetus (teratology).
- ③ intra-uterine Fetal Death.

① Abnormalities of Fertilization:

- ① Wandering of ovum.
- ② Superfecundation.
- ③ Superfetation.
- ④ Ectopic pregnancy.
- ⑤ Twinning.

① Superfecundation. (A)

• Def:

Fertilization of More than one ovum in one estrus cycle By Different males.

• Occurrence:

Occur in Dog (Bitch), queen, sheep, goat.

More Common in Bitch Due to:

- ① long estrus phase (4-8 days).
- ② ovum Remain viable For long time (4-5 days).
- ③ Bitch allows to be mounted By Different males.

• Diagnosis:

During parturition, There is difference in size among offsprings.

② Superfetation. (A)

• Def:

Fertilization of More than one ovum in different estrus cycle By different males or By the same Male.

• Occurrence:

Recorded in Deer only, Rare in other Animals.

• Cause:

① Amount of $P_4 \rightarrow$ ② FSH \rightarrow Mature graafian Follicle In case of:

- ① Delayed implantation of Fetus in Endometrium.
- ② embryonic diapause \rightarrow Arrest development of Fetus.

• Result:

- ① Presence of 2 Fets (Different in size).
- ② Double Parturition (interval Between them \rightarrow the Period Between 2 estrus cycle).

(19)

③ Case history From owner من Superfecundation, superfetation الفرق بين
 Different Mating in the same estrus cycle. Different Mating in Different estrus cycle.

③ wandering of the ovum. ③.

• Def..

Implantation of zygote in the horn opposite to the ovary at which ovulation occurs.

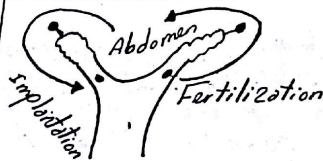
• Mechanism..

Internal Migration



• Fertilized ovum migrate from one horn to the other through the uterine body.

External Migration



• Fertilized ovum migrate from one horn → crossing peritoneal cavity → to the other horn where it is implanted.
 • Very Rare.

• Diagnosis..

ovary contain CL while other horn contain zygote.

④ Twinning. ④.

• Def..

presence of more than one fetus in uterus.

• Types..

Identical

one ovum + one sperm
 ↓
 zygote
 ↓
 cleaved into 2
 Feti.

Non-identical

Arise From one of the Following:

- ① 2 Follicle → 2 ovum + 2 sperm → 2 Feti.
- ② one follicle → 2 ovum + 2 sperm → 2 Feti.
- ③ one ovum → 2 Nuclei + 2 sperm → 2 Feti.

• Causes..

- ① Super use of hormones → FSH.
- ② After Recovery From Cystic ovary.
- ③ Mostly in Mid of age.
- ④ ↑ Plane of feeding especially in sheep, goat Before Breeding.

• Diagnosis..

- ① ↑ size of Abdomen.
- ② Bad general health state especially in late stage.
- ③ Different parts of Fetus By R.E or Sonar
 ↳ 2 heads.
 ↳ 4 Fore limb.

③ Intra-uterine Fetal Death: (Pregnancy)

• Causes:

① Maternal Causes

- ① Infection → Fever (febrile stage)
- ② Advanced uterine Torsion.
- ③ Separation of Placenta.

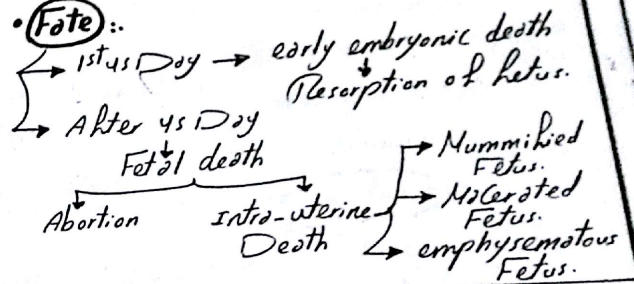
② Fetal Factors

- ① Abnormal P.p.p.
- ② Fetal membranes Affection.

③ Environmental Factors

- ① Toxic Drug, ... Plants.
- ② Severe Trauma.
- ③ Nutritional deficiency

• Fate:



① Mummified Fetus

• Def:

Dryness of Fetus, Fetal Fluid, Fetal membranes.
under aseptic conditions (No infection).

• (Stages (steps)):

- ① Death of Fetus.
- ② closure of Cervix.
- ③ Absorption of Amniotic, Allantoic sac.
- ④ Absorption of Fluid from Soft Tissue.
- ⑤ Deposition of Ca²⁺ on fetus.

② Macerated Fetus

• Def:

lysis of soft tissue of fetus and Bony Parts stay in uterus By Action of infection.

• Ch By:

- ① infection. ② open Cervix.

• (Stages (steps)):

- ① Death of Fetus.
- ② Invasion By M.o.
- ③ lysis of soft tissue of fetus except Bony Parts.
- ④ Fetus + M.o → Pus → Pyemia.
- ⑤ Bony Parts Floating in Pus.

③ Emphysematous Fetus

• Def:

Invasion of Dead Fetus During Dystoia By gas Forming M.o → ↑ size of fetus (Big Fetus) (More Swollen).

• (Stages (steps)):

- ① Neglected Dystoia.
- ② Dilated Cervix Before Birth.
- ③ Dead Fetus.
- ④ Invasion of gas Forming
- ⑤ ↑ size of Fetus.

⑥ Separation of Fetal membranes from uterus and become adhere to fetus → stone-like structure inside uterus.

• Causes ::

- ① uterine Torsion.
- ② occlusion of umbilical Cord.

• Symptoms ::

- ① Bad general health disturbance → Colic → disappear After 3-4 Days.
- ② No Signs of Approaching Parturition. → appear then disappear.
- ③ At Pass Real time of Parturition.
- ④ ↓ Size of udder, Abdomen.

• Diagnosis ::

- ① Case history, signs.
- ② Rectal Ex.
- ③ vaginal Ex.

① Rectal examination ::

- ① Ovary → easily Reached. C.L.
- ② Uterus → No fetal Fluid (Fluctuation).
→ No FMs.
→ No Placenta.
→ Stone-like structure.
- ③ Cervix → Difficult to be retractable.

• Causes ::

- ① Prepartum infection (By)
 - Gambylobacter.
 - Vibrios.
 - Trichomoniasis.
 Due to insufficient closure of Cervix in last stage of Parturition.
- ② Prepartum Vaginal Proapse.

• Symptoms ::

- ① Bad general health disturbance (Colic - Anorexia - Fever).
- ② Frequent offensive Discharge From vulva containing pieces of Fetus, Fetal membranes → ↑ By the time.

• Diagnosis ::

- ① Case history, Signs.
- ② Rectal Ex.
- ③ vaginal Ex.

① Rectal Examination ::

- uterus
 - Doughy.
 - Absence of FMs.
 - No Placenta.
 - Thick uterine wall.
 - By pressure → More Pus secretion.
 - Crepitating Sound Due to Bone in Pus.

• Causes ::

- ① Dystoia → Due to Dam, fetus, Fetal membranes
- ② Anomalies, large size Fetus, Abnormal P.P.P.
- ③ gas Forming M.O.

• Symptoms ::

- ① Animal go on dystoia Case with history of Rupture of Fetal Fluid and No Progression of delivery Fetus.
- ② Bad, offensive discharge From vulva.
- ③ Bad general disturbance.

• Diagnosis ::

- Case history, Signs
- Rectal Ex.
- Vaginal examination

① Vaginal Examination ::

- ① your hand Difficult to Move Between uterine wall, Fetus.
- ② wide opened Cervix.

- If Fetus Small, old...
→ easily to be retractable.
- If Fetus recent, large...
→ Difficult to be retractable.

② Vaginal Examination::

Dry vagina with closed Cervix.

• Treatment::

- ① Posterior epidural Anesthesia.
- ② Diffusion of Artificial Fetal Fluid.
- ③ Induction of Abortion By Hormonal TIT
→ Preker → PGH_{2α}
But, estrogen → ④ Milk production.
- ④ Manual Removal of mummified Fetus.
- ⑤ local and systemic Antibiotics.

② C-section

- Recent, large fetus → C-section
- old, small fetus → Difficult

شرح
C-section.

② Vaginal Examination::

Cervix → opened.
→ semi-opened.

• Treatment::

- ① Posterior epidural Anesthesia.
- ② Douching By Artificial Fetal Fluid.
- ③ Manual dilatation of Cervix →
Try to Remove it By your hands,
For Cep.
- ④ Dilatation of Cervix By estrogen
After 3-4 hr Followed By →
PGH_{2α}.
- ⑤ Na Bicarbonate Solution →
More softening, More lysis,
More liquefaction, secretion More
watery.
- ⑥ Rubber Catheter → Drainage
of Fluid.

• Complication::

- ① Chronic endometritis.
- ② Pyemia.
- ③ Peritonitis.

• Sequelae of Chronic Case::

→ Slaughter.

② Rectal Examination::

uterus
→ Thin uterine wall.
→ No FMs.

شرح آفت vaginal قبل
Ex.

② Rectal Ex.

• Treatment::

- ① epidural anesthesia.
- ② Pumping of Artificial Fetal Fluid.
- ③ Try to Reduce size of Fetus By → Different incision in skin of fetus
→ escape of Air →
attraction of Fetus.
- ④ local, systemic Antibiotics.
- ⑤ uterine wash by H₂O₂.

② Fetotomy

→ Partial.
→ Complete.

شرح
شرح

Q. Presence of twins in the Farm is Preferable or Not..??

- ① Preferred in small A^s as Sheep, goat, Bitch, Cat.
- ② Not preferred in large A^s especially Mare.

• Disadvantages of twinning on Dam:

- ① Dystoia Due to → uterine inertia
→ Different P.P.P of the 2 feti.
- ② Delayed uterine involution.
- ③ Most Metabolic Diseases appear Around Parturition.
- ④ Delayed ovarian Rebound.
- ⑤ Retained Placenta.

• Disadvantages of twinning on Fetus:

- ① Abortion.
- ② Pre-mature Birth.
- ③ Small size.
- ④ in Case of twins of different sexes, the delivered females are Being sterile due to Freemartinism.

⑤ Ectopic Pregnancy. ⑤

• Def :: pregnancy outside the uterus.
• Rare in Animals.

• Types ::

① True (Primary) Ectopic Pregnancy

Secondary (False) Ectopic pregnancy

• In which Fertilized ovum implanted in place other than the uterus.

① Tubal Pregnancy

② ovarian Pregnancy

③ True Abdominal Pregnancy

- The most Common type.
- 95% of Cases occur in → ampulla - isthmus Junction.
- sequelae → Rupture of Fallopian tube.

• Causes ::

- ① Absence or defect in Cilia.
- ② Adhesion of meso Salpinx → ④ Motility of tube.
- ③ Narrowing of tube Due to Salpingitis, Tumor.

- Implantation of zygote in ovarian stroma.
- very Rare.
- sequelae → Rupture of ovary.

- Implantation of zygote in Abdominal Cavity.
- there is No Previous Relationship Between Fetus and uterus.

- zygote present Firstly in uterus, then uterus is Ruptured and zygote migrate to the Abdomen.
- There is Relationship Between Fetus and uterus.

• Diagnosis :: ① Sonography.
② laparoscopy.

• Sequelae :: Fetal Death.

⑫

① Lethal Anomalies:

② Anomalies of Fetus (Teratology)

① Lethal.
② Non lethal.
③ Miscellaneous.

Achondroplasia (Bull Dog) ②

- Ch 13 :-
- ① Short limbs.
- ② Short, Broad head.
- ③ Bulging of Forehead.
- ④ enlarged Abdomen.
- ⑤ Mal occlusion of the Jaw.
- Sequelae:-
- Defect in Swallowing → hydropsy → death.

Persomus elimbis ②

- Absence of all vertebrae Caudal to thoracic Region.
- lead to:- hopping gate.
- شجرة متفرعة

Persomus acaudatus ②

- Absence of Sacrum and Coccygeal vertebrae.
- lead to:-
- Sunken Perineal Region.

Hydrocephalus ②

- Accumulation of H₂O in Brain Ventricle → Pressure on Brain, Nerves → Atrophy
- extermities.
- Brain tissues
- associated with hydroamniosis.
- More common in 3rd, 4th Month.

Schistosoma Reflexum ②

- Ventral Curvature of Spinal Cord
- ↓
- Permanent opening in thoracic and Abdominal Cavity of Fetus
- ↓
- Viscera of fetus.
- Floating in uterus of Dam
- ↓
- Due to → Pressure on Linea Alba.

Anasarca ③

- passive Accumulation of water (edema) under skin of all Body tissues.

② Miscellaneous Anomalies:

Conjoined Fetus :: (Twin Duplication) ②

Complete Duplication

- ① Thoracophagus → Adherence of 2 twins in thoracic Region.
- ② Craniophagus → Adherence of 2 twins in head Region.
- ③ Caudophagus, Pyrophagus → Back to Back, tail to tail, Sacrum to sacrum Adherence.

Partial Duplication

- one Feti Duplication in one organ
- ① DiCephalus → Double head, Double Face, 3, 4 legs.
- ② iDiprosopus → Double Face.
- ③ MonoCephalus tetrapus Dibrachus → 4 kind limbs.

③ Non-lethal

- ① umbilical hernia.
- ② Supra-mammary teats.

③